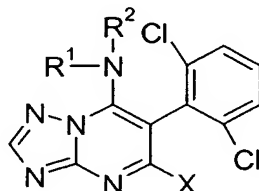


We claim:

1. A 6-(2,6-dichlorophenyl)triazolopyrimidine of the formula I



- 5 in which the substituents are as defined below:

10 R¹, R² independently of one another are hydrogen, C₁-C₈-alkyl, C₁-C₈-haloalkyl, C₃-C₈-cycloalkyl, C₃-C₈-halocycloalkyl, C₂-C₈-alkenyl, C₂-C₈-haloalkenyl, C₃-C₆-cycloalkenyl, C₃-C₆-halocycloalkenyl, C₂-C₈-alkynyl, C₂-C₈-haloalkynyl or phenyl, naphthyl, or a five- or six-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four heteroatoms from the group consisting of O, N and S,

15 R¹ and R² together with the nitrogen atom to which they are attached may also form a five- or six-membered heterocyclyl or heteroaryl which is attached via N and may contain one to three further heteroatoms from the group consisting of O, N and S as ring member and/or may carry one or more substituents from the group consisting of halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₂-C₆-alkenyl, C₂-C₆-haloalkenyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₃-C₆-alkenyloxy, C₃-C₆-haloalkenyloxy, (exo)-C₁-C₆-alkylene and oxy-C₁-C₃-alkyleneoxy,

R¹ and/or R² may carry one to four identical or different groups Rᵃ:

25 Rᵃ is halogen, cyano, nitro, hydroxyl, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkylcarbonyl, C₃-C₆-cycloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkoxycarbonyl, C₁-C₆-alkylthio, C₁-C₆-alkylamino, di-C₁-C₆-alkylamino, C₂-C₈-alkenyl, C₂-C₈-haloalkenyl, C₃-C₈-cycloalkenyl, C₂-C₆-alkenyloxy, C₃-C₆-haloalkenyloxy, C₂-C₆-alkynyl, C₂-C₆-haloalkynyl, C₃-C₆-alkynyloxy, C₃-C₆-haloalkynyloxy, C₃-C₆-cycloalkoxy, C₃-C₆-cycloalkenyloxy, oxy-C₁-C₃-alkyleneoxy, phenyl, naphthyl, a five- to ten-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four heteroatoms from the group consisting of O, N and S,

35 where these aliphatic, alicyclic or aromatic groups for their part may be partially or fully halogenated or may carry one to three Rᵇ groups;

- 5 R^b is halogen, cyano, nitro, hydroxyl, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, alkyl, haloalkyl, alkenyl, alkenyloxy, alkynyloxy, alkoxy, haloalkoxy, alkylthio, alkylamino, dialkylamino, formyl, alkylcarbonyl, alkylsulfonyl, alkylsulfoxyl, alkoxycarbonyl, alkylcarbonyloxy, alkylaminocarbonyl, dialkylaminocarbonyl, alkylaminothiocarbonyl, dialkylaminothiocarbonyl, where the alkyl groups in these radicals contain 1 to 6 carbon atoms and the abovementioned alkenyl or alkynyl groups in these radicals contain 2 to 8 carbon atoms;
- 10 and/or one to three of the following radicals:
- 15 cycloalkyl, cycloalkoxy, heterocyclyl, heterocyclyloxy, where the cyclic systems contain 3 to 10 ring members; aryl, aryloxy, arylthio, aryl- C_1 - C_6 -alkoxy, aryl- C_1 - C_6 -alkyl, hetaryl, hetaryloxy, hetarylthio, where the aryl radicals and hetaryl radicals preferably contain 6 to 10 ring members and 5 or 6 ring members, respectively, where the cyclic systems may be partially or fully halogenated or substituted by alkyl or haloalkyl groups.
- 20 X is C_1 - C_4 -alkyl, cyano, C_1 - C_4 -alkoxy, C_1 - C_2 -haloalkoxy, C_3 - C_4 -alkenyloxy or C_3 - C_4 -haloalkenyloxy.
- 25 2. The compound of the formula I according to claim 1, in which the substituents are as defined below:
- 30 R^1 is C_4 - C_8 -alkyl, C_4 - C_8 -haloalkyl, cyclopropyl, cyclohexyl, C_3 - C_8 -halocycloalkyl, C_3 - C_6 -cycloalkyl- C_1 - C_4 -alkyl, C_5 - C_8 -alkenyl, C_2 - C_8 -haloalkenyl, C_3 - C_6 -cycloalkenyl, C_3 - C_6 -halocycloalkenyl, C_2 - C_8 -alkynyl, C_2 - C_8 -haloalkynyl or phenyl, naphthyl, or a five- or six-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four heteroatoms from the group consisting of O, N and S,
- 35 R^2 is hydrogen, C_1 - C_3 -alkyl or one of the groups mentioned under R^1 ,
- 40 R^1 and R^2 together with the nitrogen atom to which they are attached may also form a five- to eight-membered heterocyclyl or a five- or six-membered heteroaryl which is attached via N and may contain one to three further heteroatoms from the group consisting of O, N and S as ring member and/or may carry one or more substituents from the group consisting of halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_2 - C_6 -alkenyl,

C₂-C₆-haloalkenyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₃-C₆-alkenyloxy, C₃-C₆-haloalkenyloxy, (exo)-C₁-C₆-alkylene and oxy-C₁-C₃-alkyleneoxy,

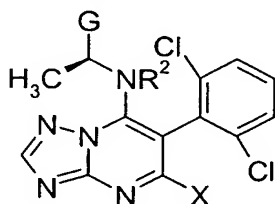
except piperidin-1-yl and 4-methylpiperidin-1-yl;

R¹ and/or R² may carry one to four identical or different groups R^a:

R^a is halogen, cyano, nitro, hydroxyl, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkylcarbonyl, C₃-C₆-cycloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkoxycarbonyl, C₁-C₆-alkylthio, C₁-C₆-alkylamino, di-C₁-C₆-alkylamino, C₂-C₈-alkenyl, C₂-C₈-haloalkenyl, C₂-C₆-alkenyloxy, C₂-C₈-alkynyl, C₂-C₈-haloalkynyl, C₃-C₆-alkynyloxy, oxy-C₁-C₃-alkyleneoxy, C₃-C₈-cycloalkenyl, phenyl, naphthyl, a five- or six-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four heteroatoms from the group consisting of O, N and S, where these aliphatic, alicyclic or aromatic groups for their part may be partially or fully halogenated.

3. The compound of the formula I according to claim 1 or 2, in which R¹ and R² together form a pyrrolidine ring which may carry one to four identical or different groups R^a.

4. A compound of the formula I.1:



I.1

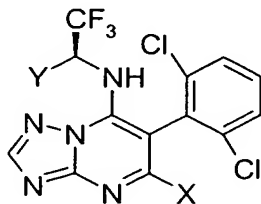
in which

G is C₂-C₆-alkyl, C₁-C₄-alkoxymethyl or C₃-C₆-cycloalkyl;

R² is hydrogen or methyl; and

X is methyl, cyano, methoxy or ethoxy.

5. A compound of the formula I.2,

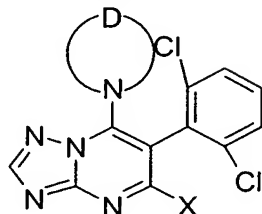


I.2

in which Y is C₂-C₆-alkyl and X is methyl, cyano, methoxy or ethoxy.

6. The compound of the formula I.2 according to claim 5, in which Y is cyano, methoxy or ethoxy.

- 5 7. A compound of the formula I.3,



I.3

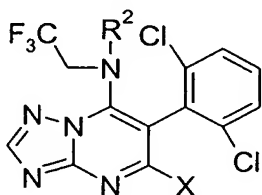
in which

- 10 D together with the nitrogen atom forms a five- or six-membered saturated or partially unsaturated heterocyclyl or heteroaryl which is attached via N and may contain a further heteroatom from the group consisting of O, N and S as ring member and/or may carry one or more substituents from the group consisting of halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₂-C₆-alkenyl, C₂-C₆-haloalkenyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₃-C₆-alkenyloxy, C₃-C₆-haloalkenyloxy, (exo)-C₁-C₆-alkylene and oxy-C₁-C₃-alkyleneoxy; and

X is methyl, cyano, methoxy or ethoxy.

- 20 8. The compound of the formula I.3 according to claim 7 in which D together with the nitrogen atom forms a 4-methylpiperidine ring and X is methyl, cyano or methoxy.

9. A compound of the formula I.4

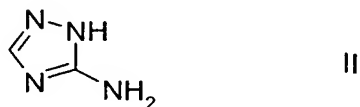


I.4

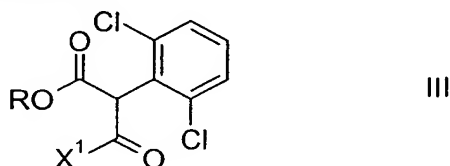
- 25 in which R² is hydrogen or methyl and X is as defined in claim 1.

10. The compound of the formula I according to claim 1 or the formula I.4 according to claim 9, in which X is methyl, cyano, methoxy or ethoxy.
- 30 11. The compound of the formula 1.4 according to claim 9, in which R² is hydrogen and X is cyano or methoxy.

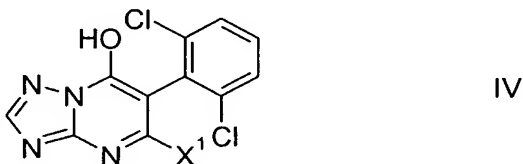
12. A process for preparing the compound of the formula I according to claim 1, in which X is alkyl or haloalkyl, by reacting 5-amino-1,2,4-triazole of the formula II



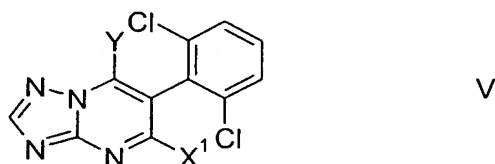
- 5 with a keto ester of the formula III



in which R is C₁-C₄-alkyl and X¹ is C₁-C₄-alkyl or C₁-C₄-haloalkyl to give a 7-hydroxytriazolopyrimidine of the formula IV,



- 10 which is, using a halogenating agent, converted into the corresponding 7-halotriazolopyrimidine of the formula V

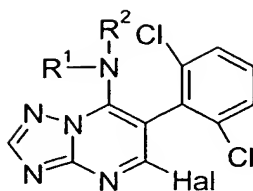


in which Y is a halogen atom, and V is reacted with an amine of the formula VI



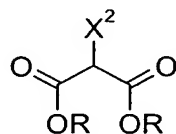
- 15 to give the compound of the formula I.
13. The compound of the formulae IV and V according to claim 12:
 5-methyl-6-(2,6-dichlorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidin-7-ol;
 7-chloro-5-methyl-6-(2,6-dichlorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine;
 20 7-bromo-5-methyl-6-(2,6-dichlorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine.
14. A process for preparing a compound of the formula I according to claim 1 or 2, in which X is alkyl by reacting a 5-halotriazolopyrimidine of the formula VII

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VII

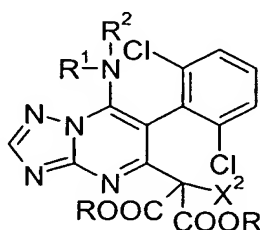
with a malonate of the formula VIII,



VIII

in which X² is hydrogen or C₁-C₃-alkyl and R is C₁-C₄-alkyl, to give a compound of the formula IX

5



IX

which, after decarboxylation, gives the compound of the formula I.

15. A process for preparing the compound of the formula I according to claim 1 or 2, in which X is cyano, alkoxy, haloalkoxy, alkenyloxy or haloalkenyloxy by reacting a 5-halotriazolopyrimidine of the formula VII according to claim 14 with a compound of the formula X,

10



in which M is an ammonium, tetraalkylammonium or alkali metal or alkaline earth metal cation and X³ is a cyano, alkoxy, haloalkoxy, alkenyloxy or haloalkenyloxy group.

15

16. A composition, comprising a solid or liquid carrier and a compound of the formula I according to claim 1 or 2.

20

17. Seed, comprising a compound of the formula I according to claim 1 or 2 in an amount of from 1 to 1000 g/100 kg.

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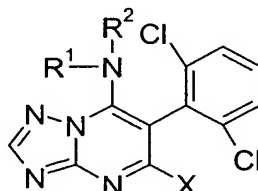
18. A method for controlling phytopathogenic harmful fungi, which method comprises treating the fungi or the materials, plants, the soil or seed to be protected against fungal attack with an effective amount of a compound of the formula I according to claim 1 or 2.

6-(2,6-Dichlorophenyl)-triazolopyrimidines, methods for the production thereof, use thereof for controlling pathogenic fungi, and agents containing the same

Abstract

5

6-(2,6-Dichlorophenyl)triazolopyrimidines of the formula I



I

in which the substituents are as defined below:

- 10 R¹, R² are hydrogen, alkyl, haloalkyl, cycloalkyl, halocycloalkyl, alkenyl, haloalkenyl, cycloalkenyl, halocycloalkenyl, alkynyl, haloalkynyl or phenyl, naphthyl, or a five- or six-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four heteroatoms from the group consisting of O, N and S,
- 15 R¹ and R² together with the nitrogen atom to which they are attached may also form a five- or six-membered heterocyclyl or heteroaryl which is attached via N and may contain one to three further heteroatoms from the group consisting of O, N and S as ring member and which is substituted according to the description;
- 20 X is alkyl, cyano, alkoxy, haloalkoxy, alkenyloxy or haloalkenyloxy;

processes for preparing these compounds, compositions comprising them and their use for controlling phytopathogenic harmful fungi.